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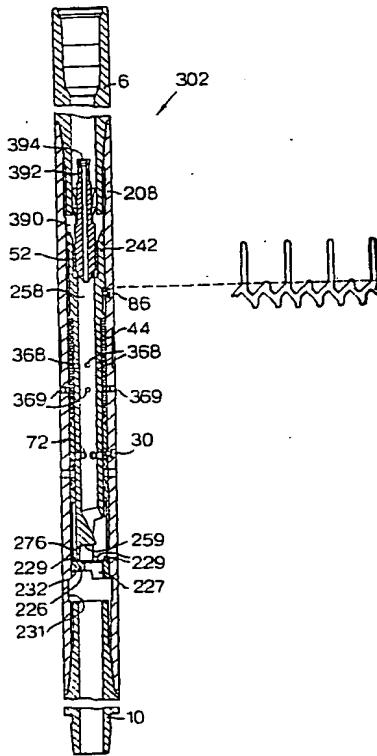
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(54) Title: MULTI-CYCLE DOWNHOLE APPARATUS



(57) **Abstract:** The present invention relates to downhole apparatus and particularly, but not exclusively, to multi-cycle circulating subs used during downhole drilling operations. Apparatus is provided comprising a piston (242) slidably mounted in a body between positions in which at least one aperture in the body is opened and closed. Movement of the piston (242) is controlled by a pin (86), secured to one of the body and a control member, and a control groove (52) formed in the other of the body and control member for receiving a portion of the pin. An arrangement of elements (232, 276) respectively connected to the control member and body is such as to normally resist axial movement of the control member from a first axial position to a second axial position. A spring (44) is located in a chamber for biasing the piston (242). The chamber is vented by an opening in the body.

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